

Inside:

NEW RMs/SRMs

SRM 695
SRM 1494
SRM 2264
SRM 2265
SRM 2266
SRM 2426
SRM 2870
RM 8504

Renewals Revisions

NIST SRM News Exhibits



The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.

New NIST RMs/SRMs

NIST SRM 695 Trace Elements in Multi-Nutrient Fertilizer

During the past seven years, several states within the U.S. have enacted regulations that limit the amounts of selected non-nutritive elements in fertilizers. Internationally, several countries including Japan, China, and Australia, and the European Union also limit the amount of selected elements in fertilizers. The elements of interest include As, Cd, Co, Cr, Cu, Hg, Mo, Ni, Pb, Se and Zn. Fertilizer manufacturers and state regulatory authorities, faced with meeting and verifying these limits, need to develop analytical methods for determination of the elements of concern and to validate results obtained using these methods. Until now, there were no certified reference materials available with certified mass fraction values for all of the elements of interest in a blended multi-nutrient fertilizer matrix.



A new Standard Reference Material, SRM 695 Trace Elements in Multi-Nutrient Fertilizer, was developed in collaboration with members of the Association of American Plant Food Control Officials (AAPFCO) and The Fertilizer Institute (TFI) to help meet these needs. SRM 695 has recently been issued with certified mass fraction values for 17 elements, reference values for an additional five elements, and information values for two elements. The Certificate of Analysis includes an addendum listing the percent recovery values for eight of these elements determined using an acid-extraction ICP-OES method recently developed and tested by members of the AAPFCO.

Technical Contact: Liz Mackey
Email: lmackey@nist.gov

Four New Calibration Solutions Developed in Collaboration with U.S. Environmental Protection Agency (EPA)

NIST SRM 1494 Aliphatic Hydrocarbons in 2,2,4-Trimethylpentane **SRM 2264 Nitro-PAHs I in Methylene Chloride** **SRM 2265 Nitro-PAHs II in Methylene Chloride** **SRM 2266 Hopanes and Steranes**

A working group of investigators, which is characterizing and quantifying the organic compounds in particulate matter (PM) as part of the U.S. EPA's PM 2.5 research program and related studies, included alkanes, nitro-polycyclic aromatic hydrocarbons (nitro-PAHs), and hopanes and steranes as four of the priority groups of compounds for preparation of new solution SRMs. The SRMs developed include SRM 1494 Aliphatic Hydrocarbons in 2,2,4-Trimethylpentane, SRM 2264 and SRM 2265 Nitro-PAHs I and II in Methylene Chloride, and SRM 2266 Hopanes and Steranes in 2,2,4-Trimethylpentane. SRM 2264 Nitro-PAHs in Methylene Chloride I contains 11 nitro-PAHs ranging in volatility from the nitronaphthalenes to nitrofluorene at concentrations between 2 mg/kg and 4 mg/kg, while SRM 2265 Nitro-PAHs in Methylene Chloride II contains 15 Nitro-PAHs ranging in volatility from nitrophenanthrenes/anthracenes to nitrobenzo[*a*] - and nitrobenzo[*e*]pyrenes at concentrations between 2.5 mg/kg and 5 mg/kg. SRM 1494 is a solution of 20 compounds, including even and odd carbon number aliphatic hydrocarbons from *n*-decane to *n*-eicosane, even carbon number aliphatic hydrocarbons from *n*-eicosane to *n*-tetratriacontane, and pristine and phytane in 2,2,4-trimethylpentane (*iso*-octane) at concentrations from 9 mg/kg to 200 mg/kg. SRM 2266 is a solution of five hopanes and five steranes in 2,2,4-trimethylpentane (*iso*-octane) at concentrations from 1 mg/kg to 35 mg/kg. These solutions will be useful for validating the chromatographic separation step (retention times and detector response), spiking samples, studying analyte recoveries, and determining response factors for the specific analytes.



Technical Contact: Michele Schantz
Email: michele.schantz@nist.gov

NIST SRM 2426 55% Aluminum Zinc Alloy Rust Never Sleeps: New SRM Aids Coated Steel Industry

The National Institute of Standards and Technology (NIST) has developed a new reference material to aid quality control in the steel coatings industry. The new Standard Reference Material (SRM) 2426 is a 55% aluminum-zinc alloy certified by NIST not only for the aluminum and zinc content but also for silicon and iron, two important contaminants.

First introduced commercially in the 1970s, 55% Al-Zn is widely used as a tough, corrosion-resistant coating for sheet steel, particularly in roofing. The Zinc Aluminum Coaters Association (ZAC) claims it as the fastest-growing coated steel product in the world. The alloy is applied to sheet steel using a hot-dip coating process. Huge coils of cold-rolled steel wind through a vat of the molten alloy at speeds up to three meters a second. The coating must meet industrial standards for thickness and chemical composition, so the steel typically is sampled for quality control at regular intervals.

Over time, the molten alloy vat gradually accumulates iron and silicon from the steel, and must be monitored to prevent the concentration of contaminants from getting too high. The new NIST reference material represents 55% aluminum-zinc alloy that is near the maximum allowable concentrations of iron and silicon as set by ASTM*, and can be used by steel laboratories to validate the performance of their test methods at the critical upper specification limits.

NIST SRM 2426 - 55% Aluminum - Zinc Alloy was developed in cooperation with ASTM International Committee E01 on Analytical Chemistry of Metals, Ores and Related Materials. It is intended primarily for use in evaluating chemical and instrumental methods of analysis. Certified values are provided for the four elements aluminum (Al), zinc (Zn), silicon (Si), and iron (Fe).

The material from which SRM 2426 was developed is better known by one of several trade names including Galvalume® in North America and, in South America, Zincalume®, Zintro Alum™ and Galval™. From 1972 to 2004, nearly 20 million tons of these materials were produced in North America.

More information on SRM 2426 is available from NIST's Standard Reference Materials office, www.nist.gov/srm.

*ASTM A924/A924M-04 Standard Specification For General Requirements For Steel Sheet, Metallic-Coated By The Hot-Dip Process

*Media Contact: Michael Baum
Email: michael.baum@nist.gov*

*Technical Contact: John Seiber
Email: john.seiber@nist.gov*

NIST SRM 2870 Relative Permittivity

High-frequency dielectric properties, namely the relative permittivity and loss tangent, are critical parameters for understanding how materials interact with electromagnetic waves. In response to requests from the electronics industry, the National Institute of Standards and Technology (NIST) has developed SRM 2870, which will assist material manufacturers to validate their methods for measuring dielectric properties at microwave frequencies.

SRM 2870 is a cross-linked polystyrene cylinder specimen that is approximately 60 mm in diameter and 10 mm thick. The relative permittivity and loss tangent of each unit was individually measured using a circular-cylindrical cavity that operates at 10 GHz. In addition to certified values of relative permittivity and loss tangent at 10 GHz, supplemental data is provided for the frequency range between 1 GHz to 25 GHz.



Technical Contact: Michael Janezic
Email: janezic@boulder.nist.gov

NIST RM 8504 Transformer Oil

A new reference material (RM), RM 8504 has been prepared for use as a diluent oil with Aroclors in transformer oil Standard Reference Materials (SRMs) 3075 to 3080 and SRM 3090 when developing and validating methods for the determination of polychlorinated biphenyls (PCBs) as Aroclors in transformer oil or similar matrices. This suite of Aroclor transformer oil SRMs consists of individual Aroclors in the same transformer oil that was used to prepare RM 8504 and is intended for use in the determination of PCBs in oil. These transformer oil SRMs have been developed to replace SRM 1581 PCBs in Oil, which is no longer available. SRM 1581 was intended for calibrating instruments and validating methods used in the determination of PCBs in motor and transformer oils. The PCBs were present as Aroclor 1242 and Aroclor 1260 in both motor and transformer oil at concentrations near $100 \mu\text{g g}^{-1}$. Two bottles containing approximately 90 mL each of PCB-free diluent motor oil and transformer oil also were part of a unit of SRM 1581. RM 8504 is intended to replace the diluent transformer oil of SRM 1581.

NIST RM 8504 Transformer Oil (continued)

A unit of RM 8504 consists of one bottle containing approximately 100 mL of transformer oil. No additional constituents have been added to RM 8504. The material has been examined for traces of PCBs using gas chromatography with electron capture detection. PCBs, as Aroclors and as evident by electron capture detection, are not detectable in the oil. Based on dilutions of selected Aroclor SRMs, it can be stated that Aroclor levels are < 0.1 mg/kg in RM 8504. This value corresponds to < 0.089 mg/L using the reported density¹ of the transformer oil ($[0.891 \pm 0.021]$ g mL⁻¹). RM 8504, used in conjunction with the individual Aroclors in transformer oil SRMs, will be useful to laboratories to underpin accurate determination of the concentrations of individual Aroclors, Aroclor combinations, or PCB mixtures in oils or similar matrices.

¹ Poster, D.L., Schantz, M.M., Leigh, S.D., Wise, S.A. (2004) "Standard Reference Materials (SRMs) for the Calibration and Validation of Analytical Methods for PCBs (as Aroclor Mixtures)", *Journal of Research of the National Institute of Standards and Technology*, 109 (2): 245-266.

Technical Contact: Dianne Poster
Email: dianne.poster@nist.gov

Renewals

SRM 8k Bessemer Steel (Simulated) 0.1 % Carbon

SRM 854a Aluminum Alloy 5182

SRM 915b Calcium Carbonate

SRM 927d Bovine Serum Albumin (7 % Solution)

SRM 999b Potassium Chloride

SRM 1241 Aluminum Alloy 5182

SRM 1255b Aluminum Alloy 356

SRM 1256b Aluminum Alloy 380

SRM 1476a Branched Polyethylene Resin

SRM 1588b Organics in Cod Liver Oil

Renewals (continued)

SRM 1597a Complete Mixture of Polycyclic Aromatic Hydrocarbons from Coal Tar

SRM 1647e Priority Pollutant Polycyclic Aromatic Hydrocarbons (in Acetonitrile)

SRM 2631a Nitric Oxide in Nitrogen Lot # 47-F-XX

SRM 2731 Hydrogen Sulfide in Nitrogen

SRM 2735 Nitric Oxide in Nitrogen Lot # 141-C-XX

SRM 2900 Ethanol-Water Solution

SRM 3111a Cesium Standard Solution

SRM 3112a Chromium Standard Solution Lot # 030730

SRM 3152a Sodium Standard Solution Lot # 010728

SRM 3240 Ephedra sinica Stapf Aerial Parts

SRM 3243 Ephedra-Containing Solid Oral Dosage Form

SRM 3244 Ephedra-Containing Protein Powder

SRM 4401H Lot 32 Iodine-131 Radioactivity Standard

SRM 4401L Lot 32 Iodine-131 Radioactivity Standard

SRM 4412H Lot 31 Molybdenum-99 Radioactivity Standard

SRM 4412L Lot 31 Molybdenum-99 Radioactivity Standard

SRM 4929F Iron-55 Radioactivity Standard

Revisions

Certificate Revisions—Are you Using These Materials?

This is a list of our most recent certificate revisions. Users of NIST SRMs should ensure that they have the most recent certificates. NIST updates certificates for a variety of reasons, such as to extend the expiration date or to include additional information gained from stability testing. If you do not have the most recent certificate for your material, you can print or view a copy from the website at:

<http://www.nist.gov/srm>,

or contact SRM at:

Phone: (301) 975-6776

Fax: (301) 926-4751

Email: srminfo@nist.gov.

SRM 351 Sodium Carbonate

Editorial Changes

New Expiration Date:
01 July 2008

SRM 924a Lithium Carbonate

Technical and Editorial Changes

SRM 934 Clinical Laboratory Thermometer

Correction to the auxiliary scale range

SRM 1008 Photographic Film Step Tablet

Editorial Changes

SRM 1249 Nickel-based Superalloy

Editorial Changes

SRM 1264a High-Carbon Steel (Modified)

Editorial Changes

SRM 1511 Multi-Drugs of Abuse in Freeze-Dried Urine

Editorial Changes

SRM 1619b Sulfur in Residual Fuel Oil (0.7 %)

Editorial Changes

SRM 1620c Sulfur in Residual Fuel Oil (4 %)

Editorial Changes

SRM 1621e Sulfur in Residual Fuel Oil (1 %)

Editorial Changes

New Expiration Date:
01 July 2011

SRM 1622e Sulfur in Residual Fuel Oil (2 %)

Editorial Changes

New Expiration Date:
01 July 2015

SRM 1623c Sulfur in Residual Fuel Oil (0.3 %)

Editorial Changes

New Expiration Date:
13 June 2012

SRM 1632c Trace Elements in Coal

Editorial Changes

SRM 1676 Carbon Dioxide in Air

New Expiration Date:
01 February 2012

SRM 1658a Methane in Air

Lot #12-F-XX

Editorial Changes;

New Expiration Date:
01 June 2012

SRM 1659a Methane in Air

Lot #11-G-XX

Editorial Changes;

New Expiration Date:
25 April 2012

REVISIONS continued . . .**SRM 1678c Carbon
Monoxide in Nitrogen
Lot # 4-J-XX**

New Expiration Date:
29 September 2011

**SRM 1679c Carbon
Monoxide in Nitrogen
Lot # 3-I-XX**

New Expiration Date:
01 January 2012

**SRM 1846 Infant
Formula**

Editorial Changes

**SRM 1920a Near Infrared
Reflectance Wavelength
Standard from
740 nm to 2000 nm**

Editorial Changes

**SRM 1921a Infrared
Transmission Wavelength
Standard**

New Expiration Date:
31 December 2010

**SRM 2053 Infrared
Transmittance Standard**

Editorial Changes;
New Expiration Date:
31 December 2010

**SRM 2054 Infrared
Transmittance Standard**

Editorial Changes;
New Expiration Date:
31 December 2010

**SRM 2055 Infrared
Transmittance Standard**

Editorial Changes;
New Expiration Date:
31 December 2010

**SRM 2294 Reformulated
Gasoline (11 % MTBE)**

Editorial Changes

**SRM 2295 Reformulated
Gasoline (15 % MTBE)**

Editorial Changes

**SRM 2296 Reformulated
Gasoline (13 % ETBE)**

Editorial Changes

**SRM 2490 Non-
Newtonian Polymer
Solution for Rheological
Measurements**

Technical Changes

**SRM 2636a Carbon
Monoxide in Nitrogen
Lot # 57-EL-XX**

New Expiration Date:
01 January 2012

**SRM 2638a Carbon
Monoxide in Nitrogen
Lot # 55-XX-EL**

New Expiration Date:
18 January 2012

**SRM 2647a Propane in
Nitrogen**

Lot #104-C-XX
Editorial Changes;
New Expiration Date:
25 April 2012

**SRM 2648a Propane in
Nitrogen**

Lot #105-C-XX
Editorial Changes;
New Expiration Date:
25 April 2012

**SRM 2717a Sulfur in
Residual Fuel Oil (3 %)**

Editorial Changes

**SRM 2718 Green
Petroleum Coke**

Reference Value Change;
New Expiration Date:
31 December 2010

**SRM 2719 Calcined
Petroleum Coke**

Reference Value Change;
New Expiration Date:
31 December 2010

**SRM 2776 Sulfur in
Furnace Coke**

Reference Value Changes

**SRM 2810 Rockwell C
Scale Hardness -
Low Range**

Editorial Changes;
New Expiration Date:
31 December 2020

**SRM 2811 Rockwell C
Scale Hardness -
Mid Range**

Editorial Changes;
New Expiration Date:
31 December 2020

REVISIONS continued . . .

**SRM 2812 Rockwell C
Scale Hardness -
High Range**
Editorial Changes;
New Expiration Date:
01 May 2011

**SRM 3074 Phthalates in
Methanol**
Editorial Changes;
New Expiration Date:
31 July 2013

**SRM 3103a Arsenic
Standard Solution**
Editorial Changes;
New Expiration Date:
01 June 2011

**SRM 3119a Gallium
Standard Solution
Lot #890709**
Editorial Changes;
New Expiration Date:
01 November 2010

**SRM 3123a Holmium
Standard Solution
Lot # 790812**
Editorial Changes;
New Expiration Date:
01 July 2013

**SRM 3127a Lanthanum
Standard Solution
Lot # 890402**
Editorial Changes;
New Expiration Date:
01 April 2013

**SRM 3134 Molybdenum
Standard Solution**
Editorial Changes;
New Expiration Date:
01 December 2010

**SRM 3144 Rhodium
Standard Solution**
Editorial Changes;
New Expiration Date:
01 June 2009

**SRM 3145a Rubidium
Standard Solution
Lot # 891203**
Editorial Changes;
New Expiration Date:
19 June 2010

**SRM 3157a Terbium
Standard Solution
Lot # 891603**
Editorial Changes;
New Expiration Date:
01 September 2013

**SRM 3160a Thulium
Standard Solution
Lot # 790912**
Editorial Changes;
New Expiration Date:
15 September 2013

**SRM 3164 Uranium
Standard Solution
Lot #891509**
Editorial Changes;
New Expiration Date:
01 March 2011

**SRM 3166a Ytterbium
Standard Solution
Lot #790512**
Editorial Changes;
New Expiration Date:
01 September 2010

**SRM 3167a Yttrium
Standard Solution**
Editorial Changes;
New Expiration Date:
01 January 2010

**SRM 3191 Aqueous
Electrolytic Conductivity
Lot #050403**
Editorial Changes;
New Expiration Date:
22 February 2007

SRM 4251C Barium-133
Extended Expiration Date:
01 September 2010

SRM 4949C Iodine 129
Extended Expiration Date:
Technical Revisions

Order NIST SRMs Online

You can now order NIST SRMs through our new online ordering system, which is constantly being updated. This system is efficient, user-friendly and secure. Our improved search picks up keywords on the detail page along with the words in the title of each SRM.

In addition, we are in the midst of a project to add numerous certificate references for each SRM online. Please also note we are also adding numerous historical archive certificates online for your convenience.

<https://srmors.nist.gov>

Please Register Your Certificate Online!

Users of NIST SRMs should ensure that they have the most recent certificates.

<http://www.nist.gov/srd/srmregform.htm>

SRM 2006 MARKETING AND TECHNICAL CATALOGS NOW ON CD

If you would like a copy of our January 2006 SRM Marketing or Technical Catalogs on CD please call, fax, or email us at: Ph: 301-975-6776 Fax: 301-948-3730

Email: srminfo@nist.gov. These CDs are helpful to SRM users who do not have access to our online catalog on the Internet.



NIST SRM 2006 Exhibit Schedule

**AACC -Clinical Lab Expo (AACC)**

Booth #1554/1555

July 25 -27, 2006

Chicago, IL

American Chemical Society (ACS)

Booth # 716/718

September 10-14, 2006

San Francisco, CA

AOAC Annual Meeting (AOAC)

Booth #404

September 17- 21, 2006

Minneapolis, MN

MS&T 05-Materials Science & Technology (MS&T)*October 16-18, 2006*

Cincinnati, OH

Eastern Analytical Symposium (EAS)*November 14-17, 2006*

Somerset, NJ